

REMARKS

The following remarks are submitted to address the issues raised in the Office Action mailed March 15, 2004.

Claims 15 and 21-35 are currently pending in the application, claims 1-14 and 16-20 having been canceled without prejudice, and new claims 21-35 having been added. Claims 1-7 and 12-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,360,640 to Cote (hereinafter “Cote”) in view of U.S. Patent No. 4,512,225 to Green (hereinafter “Green”). Claims 8-9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cote in view of Green as applied to claim 1, and further in view of Applicant Admitted Prior Art (hereinafter “AAPA”). Claims 10-11 and 14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Cote in view of Green as applied to claim 1, and further in view of U.S. Patent No. 5,720,210 to Okahashi (hereinafter “Okahashi”). Claim 15 stands rejected as being unpatentable over Cote in view of Green and Okahashi.

Please cancel claims 1-14 and 16-20 without prejudice to, or disclaimer of, the subject matter therein. Please add new claims 21-35. Support for these new claims can be found in Applicants’ specification at pp. 2-5, 9-16, and in the claims as originally filed, among other places.

Applicants respectfully request consideration of the application in view of the following remarks.

Claims 1-7 and 12-13 – 35 U.S.C. 103(a)

The rejection of claims 1-7 and 12-13 under 35 U.S.C. 35 U.S.C. 103(a) as being unpatentable over Cote in view of Green is respectfully traversed.

Applicants have cancelled claims 1-7 and 12-13 without prejudice to, or disclaimer of, the subject matter therein. In order to advance prosecution of this application, Applicants have not separately set forth arguments for the patentability of the canceled claims over the references cited. Nonetheless, Applicants contend that these claims are patentable over Cote in view of Green for reasons similar to those set forth in Applicants' previous response.

Claims 8-9 – 35 U.S.C. 103(a)

The rejection of claims 8-9 under 35 U.S.C. 35 U.S.C. 103(a) as being unpatentable over Cote in view of Green as applied to claim 1, and further in view of AAPA is respectfully traversed.

Applicants have cancelled claims 8-9 without prejudice to, or disclaimer of, the subject matter therein. In order to advance prosecution of this application, Applicants have not separately set forth arguments for the patentability of the canceled claims over the references cited. Nonetheless, Applicants contend that these claims are patentable over Cote in view of Green as applied to claim 1, and further in view of AAPA for reasons similar to those set forth in Applicants' previous response.

Claims 10-11 and 14 – 35 U.S.C. 103(a)

The rejection of claims 10-11 and 14 under 35 U.S.C. 35 U.S.C. 103(a) as being unpatentable over Cote in view of Green as applied to claim 1, and further in view of Okahashi is respectfully traversed.

Applicants have cancelled claims 10-11 and 14 without prejudice to, or disclaimer of, the subject matter therein. In order to advance prosecution of this application, Applicants have not separately set forth arguments for the patentability of the canceled claims over the references cited. Nonetheless, Applicants contend that these claims are patentable over Cote in view of Green as applied to claim 1, and further in view of Okahashi for reasons similar to those set forth in Applicants' previous response.

Claim 15 – 35 U.S.C. 103(a)

The rejection of claim 15 under 35 U.S.C. 103(a) as being unpatentable over Cote in view of Green and Okahashi is respectfully traversed.

Embodiments of the present invention are directed to apparatuses for producing discontinuous lengths of filament. Embodiments of the present invention provide systems and apparatuses for synchronizing two rolls, each roll having a severing structure, to sever a length of filament. The synchronization of the two rolls can reduce or eliminate wear in the severing structure of both rolls.¹ Deterioration and wear in the rolls can deteriorate the quality of the chopped product and also increase costs associated with operating and maintaining a fiber chopper.²

¹ See Spec., p. 2, ll. 1-3.

² See *id.* at p. 1, ll. 16-34.

Independent claim 15 recites an apparatus for producing discontinuous lengths of filament that comprises a rotatable first roll having a first severing structure; a rotatable second roll having a second severing structure, the second severing structure corresponding with the first severing structure for severing a length of the filament positioned between the rolls; a drive system operable to independently rotate and radially position the first roll and the second roll according to a first roll drive command, a second roll drive command, and a roll spacing drive command; a sensor system operable to receive positional inputs representative of an actual current rotational position of the first roll, an actual current rotational position of the second roll, and an actual current radial spacing between the first roll and the second roll, the sensor system further operative to generate a first roll current rotational position state signal, a second roll current rotational position state signal, and a current radial spacing state signal corresponding to the positional inputs; and a control system operable to receive the first roll current rotational position state signal, the second roll current rotational position state signal, and the current radial spacing state signal and generate the first roll drive command, the second roll drive command, and the spacing drive command, wherein the control system synchronizes the positioning of the first severing structure and second severing structure during rotation of the first roll and the second roll.

Applicants respectfully submit that claim 15 is patentable over Cote in view of Green and Okahashi because none of these references teach or suggest a sensor system operable to receive positional inputs representative of an actual current rotational position of the first roll, an actual current rotational position of the second roll, and an actual current radial spacing between the first roll and the second roll, the sensor system further operative to generate a first roll current rotational position state signal, a second roll current rotational

position state signal, and a current radial spacing state signal corresponding to the positional inputs. Applicants also respectfully submit that claim 15 is patentable over Cote in view of Green and Okahashi because none of these references teach or suggest a control system operable to receive the first roll current rotational position state signal, the second roll current rotational position state signal, and the current radial spacing state signal and generate the first roll drive command, the second roll drive command, and the spacing drive command, wherein the control system synchronizes the positioning of the first severing structure and second severing structure during rotation of the first roll and the second roll.

The Examiner appears to cite Cote in view of Green as teaching each of the features of claim 15 except for “the sensor system further operable to measure a radial spacing and the drive system further operable to adjust the radial spacing.”³ Applicants respectfully traverse the combination of Green with Cote. With regard to this combination as applied to claims 1 and 12, the Examiner asserts that “one of ordinary skill in the art would have been motivated to provide the sensor system measuring current roll property of both rolls on the device of Cote since Cote teaches a system operating the rolls independently using a control system generating velocity profile that enables the rolls to cut the workpiece at the desired length and the proposed modification would only have involved mere duplication of the essential working parts of a device which is routine skill in the art.”⁴ Applicants presume that the Examiner relied on similar reasoning to combine Green with Cote as part of the rejection of claim 15.

³ Office Action, mailed March 15, 2004, p. 3.

⁴ Office Action, mailed March 15, 2004, p. 4.

Applicants respectfully submit that a person of ordinary skill in the art would not be motivated to combine the teachings of Green with the system of Cote.

The Cote system is designed to adjust the angular velocity of the cutting cylinder in order to cut ribbon of desired length when the desired length is longer or shorter than the circumference of the cutting cylinder from knife to knife. The angular velocity is calculated using an algorithm that includes the ribbon velocity, the desired signature length, the nominal signature length (the signature length that results when the cutting cylinder and the anvil cylinder rotate at a constant angular velocity relative to the ribbon), and time.⁵ This algorithm is used to develop a velocity profile of the angular velocity for the desired signature length. Since the Cote algorithm assumes a constant ribbon velocity, the only variable in determining the angular velocity is time. Cote does not calculate, adjust, or otherwise change the angular velocities of the cutting cylinder or of the anvil cylinder based on actual current roll properties of the cylinders.

Applicants respectfully submit that a person of ordinary skill in the art would not be motivated to modify the Cote system as taught by Green. Green includes a system that measures the distance of travel of a knife 18 on a knife cylinder (knife cylinder 14 as shown in FIG. 1). In contrast, the distance of travel of the knife on the cutting cylinder in Cote is not used in the algorithm of Cote to calculate angular velocity. Accordingly, Applicants respectfully submit that there is no teaching, motivation, or suggestion to modify Cote as taught by Green. Actual current roll properties of the cylinders in Cote are not used to calculate, adjust, or otherwise change the angular velocities of the cylinders. Thus, the Cote system can operate independently of Green, and the incorporation of features from Green

⁵ See Cote, col. 5, ll. 30-43.

into Cote would not improve the method of operation contemplated and disclosed by Cote. “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.” M.P.E.P. § 2143.01 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)). Applicants respectfully submit that neither Cote nor Green suggest the desirability of combining the teachings of Green with the system of Cote and that a person of ordinary skill would also not be motivated to make such a combination. For at least this reason, Applicants respectfully submit that claim 15 is patentable over Cote in view of Green and Okahashi.

New dependent claims 21-23 depend from claim 15 or an intervening dependent claim. Accordingly, Applicants also respectfully submit that claims 21-23 are patentable over Cote in view of Green and Okahashi.

New Claims

Applicants have added new claims 21-35. Support for these new claims can be found in Applicants’ specification at pp. 2-5, 9-16, and in the claims as originally filed, among other places.

New independent claim 24 relates to an apparatus for producing discontinuous lengths of filament that comprises a rotatable first roll having a first severing structure; a rotatable second roll having a second severing structure, the second severing structure corresponding with the first severing structure for severing a length of the filament positioned between the rolls; a drive system operable to independently rotate the first roll and the second roll and to position the first roll and the second roll at a desired radial spacing with respect to each other according to a drive command; a sensor system operable to make

measurements and generate current state signals representative of at least one actual current roll property of the first roll, at least one actual current roll property of the second roll, and an actual current radial spacing between the first roll and the second roll; and a control system for receiving the current state signals that is operable to generate the drive command in accordance with predetermined control parameters and based on the at least one actual current roll property of the first roll, the at least one actual current roll property of the second roll, and the actual current radial spacing, wherein the drive command synchronizes the at least one actual current roll properties of the first roll and the second roll and wherein the drive command radially positions the first roll and the second roll. New dependent claims 25-35 depend from claim 24 or an intervening dependent claim.

Applicants respectfully request that these claims be deemed in condition for allowance.

CONCLUSION

For the foregoing reasons, a favorable Office Action is respectfully solicited. The Examiner is respectfully invited to contact J. Jason Link at 336.607.7443 or Charles W. Calkins at 336.607.7315 to discuss any matter relating to this application.

Respectfully submitted,

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J. Jason Link
Attorney for Applicants
Registration No. 44,874

KILPATRICK STOCKTON LLP
1001 West Fourth Street
Winston-Salem, NC 27101-2400
336.607.7300